```
*******************************************************************
*                                                                 *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005.  A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*                                                                 *
*******************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/ONLINE/UG/regprops.html

=> s zeaxanthin/cn
L1           1 ZEAXANTHIN/CN

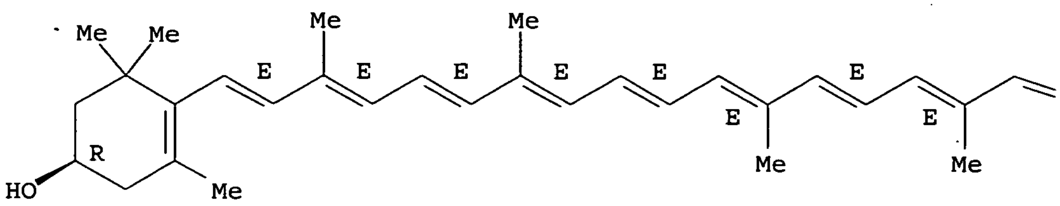
=> s astaxanthin/cn
L2           1 ASTAXANTHIN/CN

=> d l1

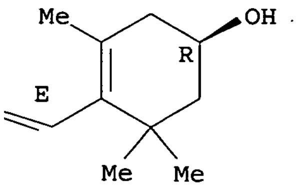
L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   144-68-3  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI)   (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   β-Carotene-3,3'-diol, (3R,3'R)-all-trans- (6CI, 8CI)
CN   Zeaxanthin (7CI)
OTHER NAMES:
CN   (3R,3'R)-Zeaxanthin
CN   all-trans-Anchovyxanthin
CN   all-trans-Zeaxanthin
CN   Anchovyxanthin
CN   Anchovyxanthin, all-trans-
CN   Xanthophyll 3
CN   Zeaxanthin, all-trans-
CN   Zeaxanthol
FS   STEREOSEARCH
DR   32638-35-0, 34182-33-7
MF   C40 H56 O2
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS,
       CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, DDFU, DRUGU, EMBASE, HODOC*,
       IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, NAPRALERT, PROMT, SPECINFO,
       TOXCENTER, USPAT2, USPATFULL, VETU
         (*File contains numerically searchable property data)
     Other Sources:   EINECS**
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.
```

PAGE 1-A



PAGE 1-B



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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

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            3553 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              36 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> d l2

L2   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   472-61-7  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI)  (CA
     INDEX NAME)
OTHER CA INDEX NAMES:
CN   β-Carotene-4,4'-dione, 3,3'-dihydroxy-, all-trans- (8CI)
CN   Astaxanthin (6CI)
OTHER NAMES:
CN   (3S,3'S)-all-trans-Astaxanthin
CN   (3S,3'S)-Astaxanthin
CN   (3S,3'S)-Astaxanthin
CN   all-trans-Astaxanthin
CN   Astaxanthin, all-trans-
CN   BioAstin
CN   BioAstin oleoresin
CN   Carophyll Pink
CN   Lucantin Pink
CN   Natupink
CN   Ovoester
CN   trans-Astaxanthin
FS   STEREOSEARCH
DR   346585-67-9
MF   C40 H52 O4
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
       CHEMCATS, CHEMLIST, CIN, CSCHEM, DDFU, DRUGU, EMBASE, IFICDB, IFIPAT,
       IFIUDB, IPA, MEDLINE, MRCK*, NAPRALERT, PROMT, SPECINFO, TOXCENTER,
       USPAT2, USPATFULL, VETU
         (*File contains numerically searchable property data)
     Other Sources:   EINECS**
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.
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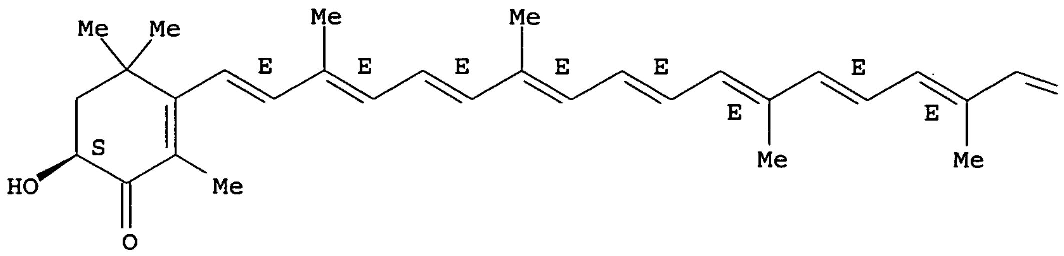
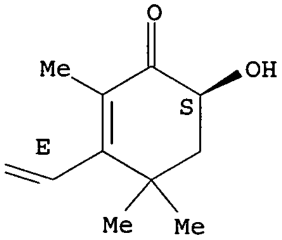
PAGE 1-A



PAGE 1-B



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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

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            2114 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              44 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> file caplusw
'CAPLUSW' IS NOT A VALID FILE NAME
SESSION CONTINUES IN FILE 'REGISTRY'
Enter "HELP FILE NAMES" at an arrow prompt (=>) for a list of files
that are available.  If you have requested multiple files, you can
specify a corrected file name or you can enter "IGNORE" to continue
accessing the remaining file names entered.

=> file caplus
COST IN U.S. DOLLARS                                 SINCE FILE     TOTAL
                                                          ENTRY   SESSION
FULL ESTIMATED COST                                       15.89     16.10

FILE 'CAPLUS' ENTERED AT 09:49:23 ON 28 OCT 2005
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FILE COVERS 1907 - 28 Oct 2005  VOL 143 ISS 18
FILE LAST UPDATED: 26 Oct 2005  (20051026/ED)
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http://www.cas.org/infopolicy.html

=> s 472-61-7 and 144-68-3
   REGlstRY INITIATED
Substance data SEARCH and crossover from CAS REGISTRY in progress...
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.





L4          3553 L3


   REGlstRY INITIATED
Substance data SEARCH and crossover from CAS REGISTRY in progress...
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.





L6          2114 L5


L7           581 L6 AND L4



=> s l7 and py<2002
      21804143 PY<2002
L8           435 L7 AND PY<2002

=> s l8 and ester? zeaxanthin
        884960 ESTER?
          4016 ZEAXANTHIN
            14 ESTER? ZEAXANTHIN
                 (ESTER?(W)ZEAXANTHIN)
L9             2 L8 AND ESTER? ZEAXANTHIN

=> s l8 and ester? astaxanthin
        884960 ESTER?
          2431 ASTAXANTHIN
            61 ESTER? ASTAXANTHIN
                 (ESTER?(W)ASTAXANTHIN)
L10            8 L8 AND ESTER? ASTAXANTHIN

=> s l9 or l10
L11           10 L9 OR L10

=> d 1-10 ibib abs hitstr

L11  ANSWER 1 OF 10  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2001:483610  CAPLUS
DOCUMENT NUMBER:          135:254257
TITLE:                    Astaxanthin accumulation in Haematococcus requires a
                          cytochrome P450 hydroxylase and an active synthesis of
                          fatty acids
AUTHOR(S):                Schoefs, B.; Rmiki, N.-E.; Rachadi, J.; Lemoine, Y.
CORPORATE SOURCE:         Plant Cytophysiology and Phycology, UPRESA CNRS 8013,
                          University of Lille 1, Villeneuve d'Ascq, F-59655, Fr.
SOURCE:                   FEBS Letters (2001), 500(3), 125-128
                          CODEN: FEBLAL; ISSN: 0014-5793
```

PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

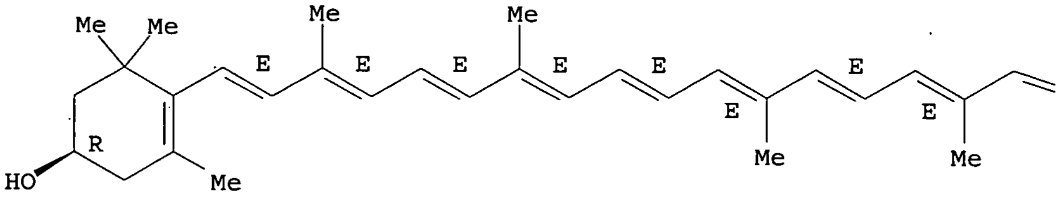
AB Astaxanthin accumulation by green microalgae is a natural phenomenon known as red snows and blood rains. The fact that astaxanthin synthesis requires oxygen, NADPH and Fe2+ led Cunningham and Gantt [Annu. Rev. Plant Physiol. Plant Mol. Biol. 49 (1998) 557-583] to propose that a cytochrome P 450-dependent enzyme might be involved in the transformation of β-carotene to astaxanthin. In Haematococcus only **esterified astaxanthin** mols. accumulate, but it is not determined whether a fatty acid synthesis should occur simultaneously to allow pigment accumulation. The aim of this contribution was to answer these two questions using specific inhibitors of β-carotene (norflurazon) and fatty acid (cerulenin) synthesis, and of cytochrome P 450 enzyme activity (ellipticine).

IT **144-68-3**, Zeaxanthin **472-61-7**, Astaxanthin
RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)
(astaxanthin accumulation in Haematococcus requires cytochrome P 450 hydroxylase and active synthesis of fatty acids)

RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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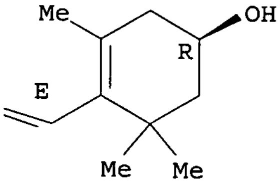
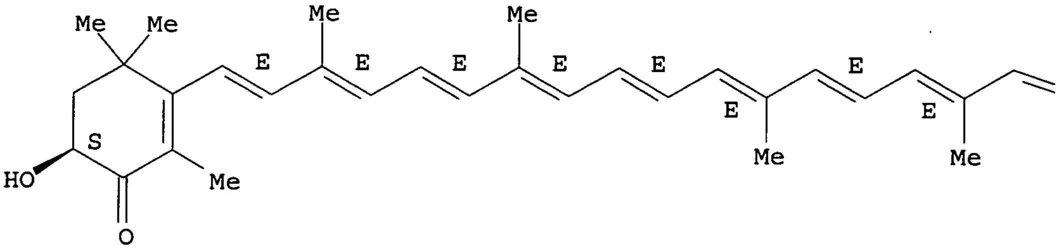


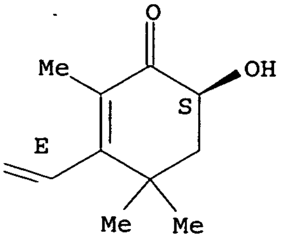
RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	2000:840580 CAPLUS
DOCUMENT NUMBER:	134:54122
TITLE:	The metabolism of astaxanthin during the embryonic development of the crayfish Astacus leptodactylus Eschscholtz (Crustacea, Astacidea)
AUTHOR(S):	Berticat, Olivier; Negre-Sadargues, Genevieve; Castillo, Rene
CORPORATE SOURCE:	Laboratoire d'Ecophysiologie des Invertebres, Universite Montpellier II, Sciences et Techniques, Montpellier, 34095, Fr.
SOURCE:	Comparative Biochemistry and Physiology, Part B: Biochemistry & Molecular Biology (**2000**), 127B(3), 309-318 CODEN: CBPBB8; ISSN: 0305-0491
PUBLISHER:	Elsevier Science Inc.
DOCUMENT TYPE:	Journal
LANGUAGE:	English

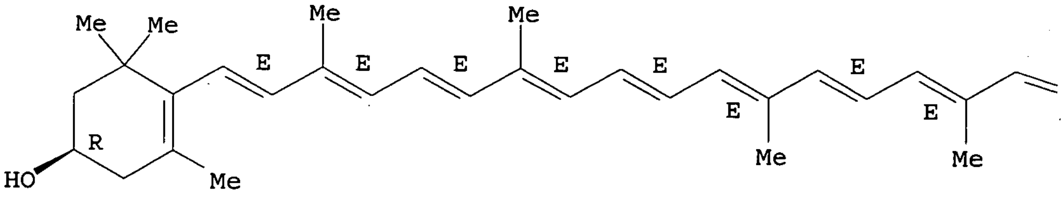
AB The developing eggs of the crayfish Astacus leptodactylus are found to contain important carotenoid amts. Free astaxanthin, mainly associated with protein and lutein represent the main pigments occurring in the yolk at the end of the embryonic period. Esterification processes affecting astaxanthin appear concomitantly with the resorption of vitellin reserves, the activation of the digestive gland and the rapid decrease of lutein amts. **Esterified astaxanthin** contents increase significantly within the interval between the juvenile stages I and II. Nevertheless, free astaxanthin levels appear insufficient to balance the amts. of the esterified form, scored at the end of the endotrophic period.

IT **144-68-3**, Zeaxanthin **472-61-7**, Astaxanthin
RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)
(astaxanthin metabolism during embryonic development of crayfish Astacus leptodactylus)

RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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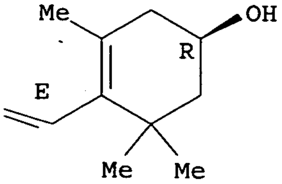
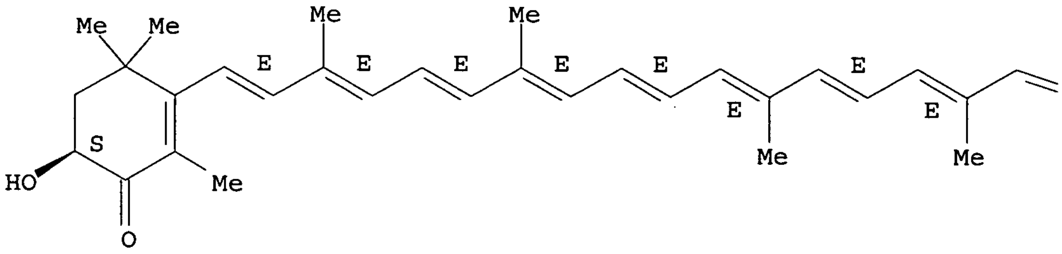


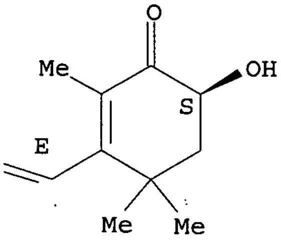
RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



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L11 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	1995:313215 CAPLUS
DOCUMENT NUMBER:	122:104668
TITLE:	Metabolism of dietary carotenoids and effects to intensify the body color of cultured sea bass
AUTHOR(S):	Kang, Dong-Soo; Ha, Bong-Seuk
CORPORATE SOURCE:	Department of Food and Nutrition, Yosu National Fisheries University, Yosu, 550-749, S. Korea
SOURCE:	Han'guk Susan Hakhoechi (**1994**), 27(3), 272-81 CODEN: HSHKAW; ISSN: 0374-8111
PUBLISHER:	Korean Fisheries Society
DOCUMENT TYPE:	Journal
LANGUAGE:	Korean

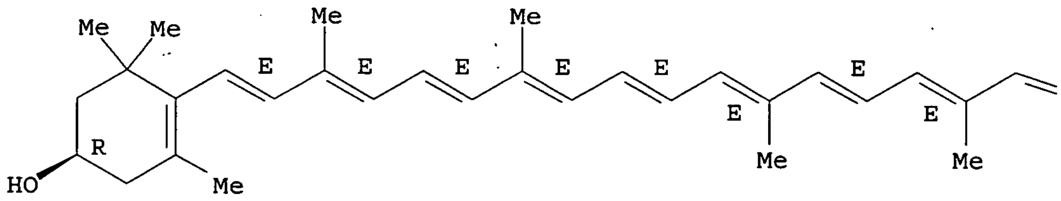
AB To investigate the effects on pigmentation and carotenoids metabolism of sea bass, Lateolabrax japonicus, by supplemented carotenoids, fish were fed the diets each containing β-carotene, lutein **ester**, **astaxanthin**, astaxanthin monoester and astaxanthin diester for 8 wk. Carotenoids in the integuments were analyzed. The important carotenoids in the integuments of sea bass were tunaxanthin and lutein. β-Carotene, β-cryptoxanthin, zeaxanthin and β-carotene triol were minor contributors. Differences in the content of β-carotene, tunaxanthin fraction and lutein were observed between the natural and cultured sea bass. The wild sea bass contained higher amts. of tunaxanthin fraction and lutein, but contained lower amts. of β-carotene than cultured sea bass. In cultured sea bass with supplemented carotenoids, carotenoid deposition was higher in order of astaxanthin monoester group, astaxanthin group and astaxanthin diester group. Based on the contents and composition of carotenoids in each group after the feeding the exptl. diet. The metabolism of carotenoid in sea bass was presumed to be the reductive metabolic pathways: astaxanthin to tunaxanthin via β-carotene triol, zeaxanthin and lutein.

IT **144-68-3**, Zeaxanthin **472-61-7**, Astaxanthin
472-61-7D, Astaxanthin, diester
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(dietary carotenoid metabolism and effects on the intensification of body color in the cultured sea bass)

RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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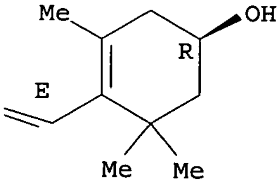
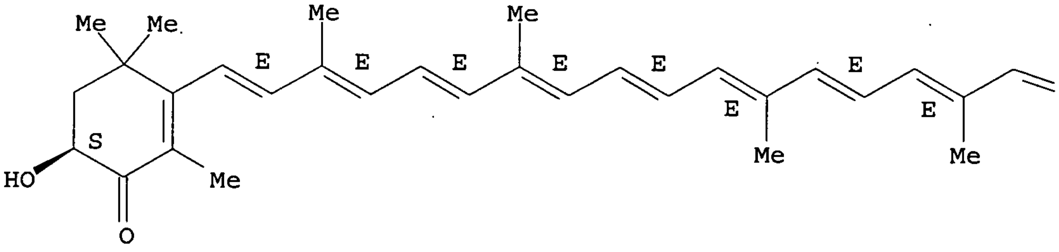


RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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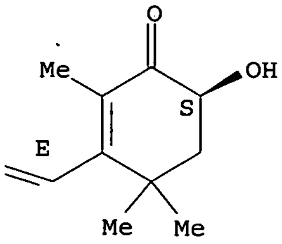
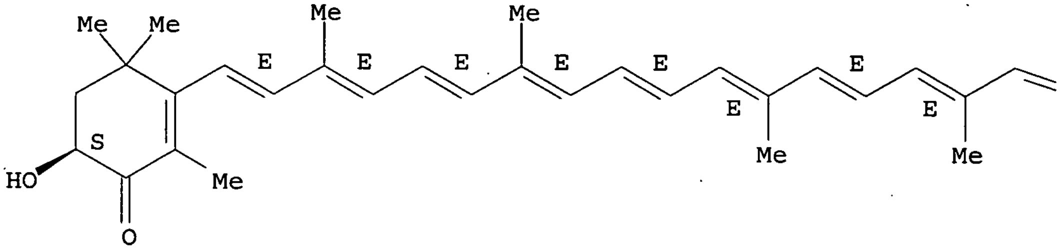


RN 472-61-7 CAPLUS

CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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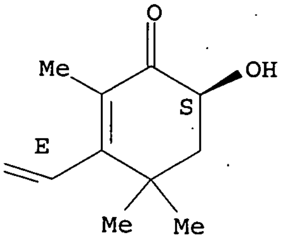


L11 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	1994:76165 CAPLUS
DOCUMENT NUMBER:	120:76165
TITLE:	Metabolism of dietary carotenoids and their effect on the improvement of pigmentation of cultured flounder and red sea bream.
AUTHOR(S):	Ha, Bong Seuk; Kang, Dong Soo; Kim, Jong Hyun; Choi, Ok Soo; Ryu, Ho Young
CORPORATE SOURCE:	Dep. Food Nutr., Gyeongsang Natl. Univ., Jinju, 660-701, Fr.
SOURCE:	Han'guk Susan Hakhoechi (**1993**), 26(2), 91-101 CODEN: HSHKAW; ISSN: 0374-8111
DOCUMENT TYPE:	Journal
LANGUAGE:	Korean

AB To investigate the effects of supplemental carotenoids on pigmentation and carotenoid metabolism in red sea bream (Pagrus major) and flounder (Paralichthys olivaceus), fish were given diets containing β-carotene, lutein **ester**, **astaxanthin**, astaxanthin monoester, astaxanthin diester, and β-apo-8'-carotenal for 8 wks. Supplementation of cultured red sea bream with carotenoids increased carotenoid deposition and fish pigmentation in the following order: astaxanthin diester, β-apo-8'-carotenal, and astaxanthin monoester. The main carotenoids of red sea bream were astaxanthin diester, tunaxanthin, and β-carotene. A differences in the content of astaxanthin diester and β-carotene was observed in wild and cultured red sea bream. In cultured flounder supplemented with carotenoids, carotenoid deposition and pigmentation increased in the order: β-carotene group and lutein ester group. The main carotenoids of flounder were zeaxanthin and lutein. Differences in lutein and β-carotene contents were observed in wild and cultured flounder. Based on the level and composition of carotenoids in each group after feeding the exptl. diets, carotenoids in red sea bream were metabolized in the reductive pathway, astaxanthin to tunaxanthin, and likewise, in flounder, lutein to tunaxanthin.

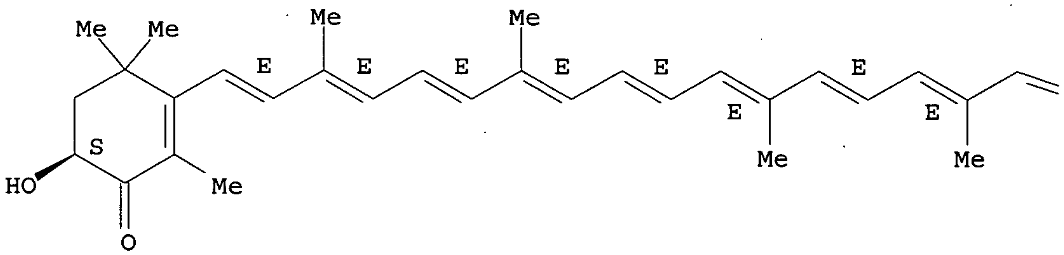
IT **472-61-7**, Astaxanthin **472-61-7D**, Astaxanthin, esters
RL: BIOL (Biological study)
(carotenoid metabolism and pigmentation of flounder and red sea bream response to dietary)

RN 472-61-7 CAPLUS

CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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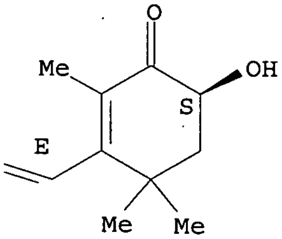
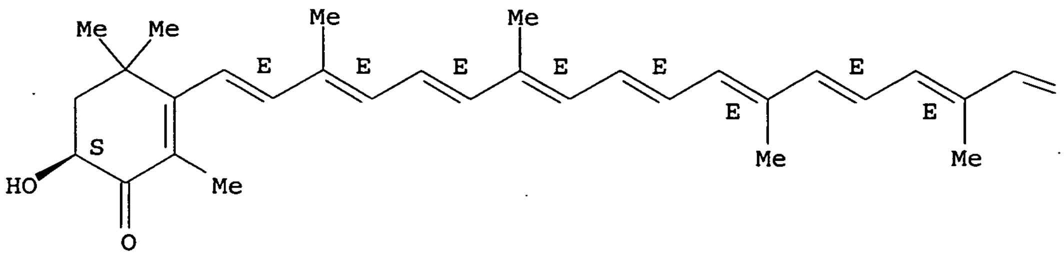


RN 472-61-7 CAPLUS

CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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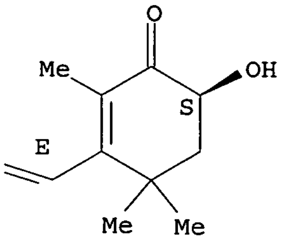
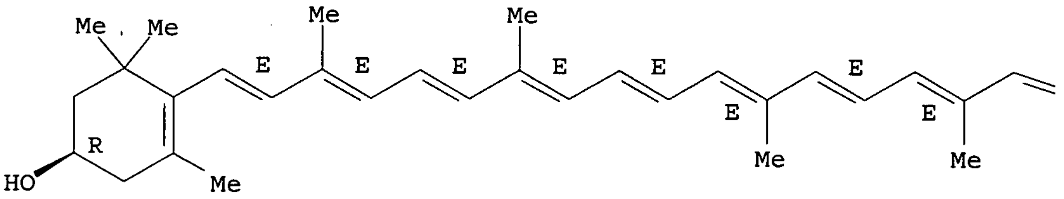


IT **144-68-3**, Zeaxanthin
RL: BIOL (Biological study)
(of flounder and red sea bream, dietary carotenoids effect on, pigmentation in relation to)
RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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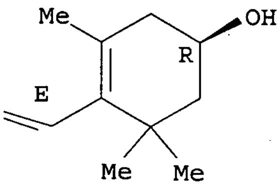


L11 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1983:15637 CAPLUS
DOCUMENT NUMBER: 98:15637
TITLE: Carotenoids in fish. XXXII. Content of carotenoids in eggs utilized in the form of caviar
AUTHOR(S): Czeczuga, B.
CORPORATE SOURCE: Dep. Gen. Biol., Med. Acad., Bialystok, 15-230, Pol.
SOURCE: Folia Histochemica et Cytochemica (**1982**),

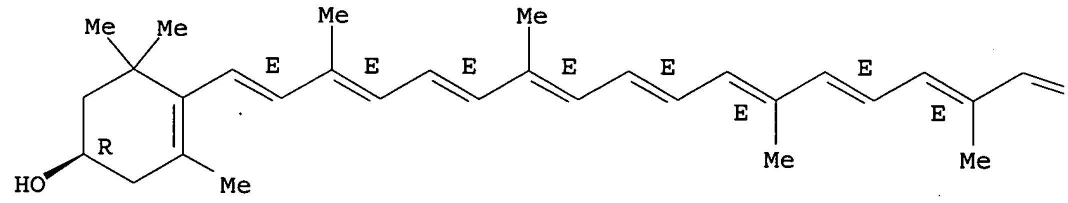
20(1-2), 63-8
CODEN: FHCYAI; ISSN: 0015-5586
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Caviar from 4 species of fish contained β-carotene [7235-40-7], β-cryptoxanthin [472-70-8], echinenone [432-68-8], canthaxanthin [514-78-3], lutein [127-40-2], tunaxanthin [12738-95-3], isozeaxanthin [29065-03-0], zeaxanthin [**144-68-3**], salmoxanthin [75138-59-9], adonixanthin [4418-73-9], adonixanthin **ester**, **astaxanthin** [**472-61-7**], and astaxanthin ester. Total carotenoids varied from 0.229 in Theragra chalcogramma caviar to 1.669 μg/g fresh weight in Oncorhynchus nerka.

IT **144-68-3 472-61-7**
RL: BIOL (Biological study)
(of caviar)
RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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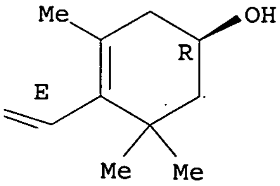
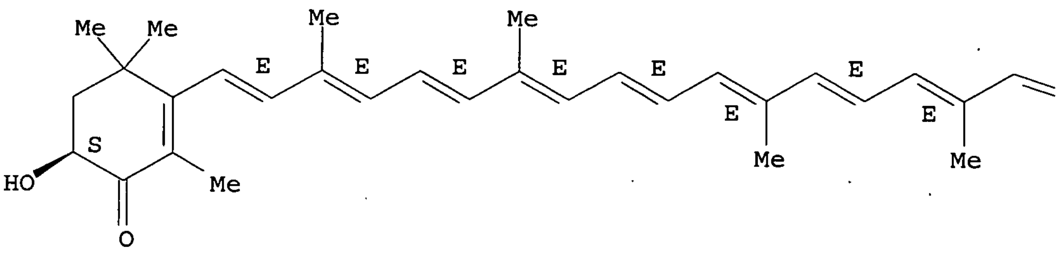


RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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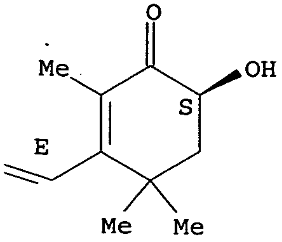


L11 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1981:44386 CAPLUS
DOCUMENT NUMBER: 94:44386
TITLE: Carotenoids of Antarctic krill (Euphausia superba Dana, Euphausia crystallorophias Holt et Tattersall) in dependence on age structure and sex
AUTHOR(S): Jackowska, Hanna; Czerpak, Romuald; Mical, Anna
CORPORATE SOURCE: Inst. Ecol., Pol. Acad. Sci., Lomianki, 05-150, Pol.
SOURCE: Polskie Archiwum Hydrobiologii (**1980**), 27(2), 291-303
CODEN: PAHYA2; ISSN: 0032-3764
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In the juvenile and adult from of E. superba and E. crystallorophias the carotenoid content accounts for 50.43-152.16 μg/g dry matter. Most carotenoids were found in females (120.20-152.16 μ/g dry matter), and the least amount of carotenoids was in the juvenile forms with body length of 15-20 mm (50.43 μg/g dry matter) and in mature males (71.26 μg/g dry matter). There was a quant. predominance of free and **esterified astaxanthin**, cryptoxanthin, flavoxanthin, and the dihydroxy derivative of ϕ-carotene; the remaining identified carotenoids: β-carotene, canthaxanthin, lutein, zeaxanthin, and an unidentified polyoxyxanthophyll, occurred in small amts. (from some 10 to several μg/g dry matter).

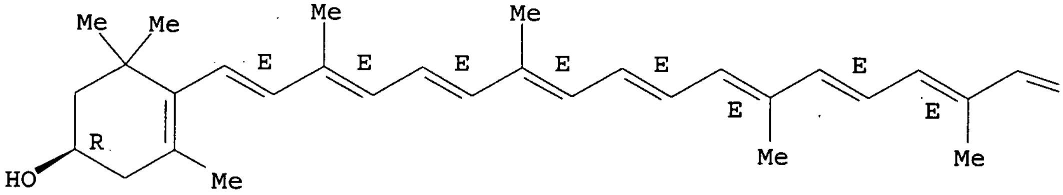
IT **144-68-3 472-61-7 472-61-7D**, esters
RL: BIOL (Biological study)
(of Antarctic krill, in development, sex in relation to)

RN 144-68-3 CAPLUS

CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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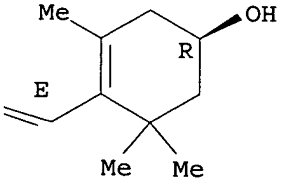
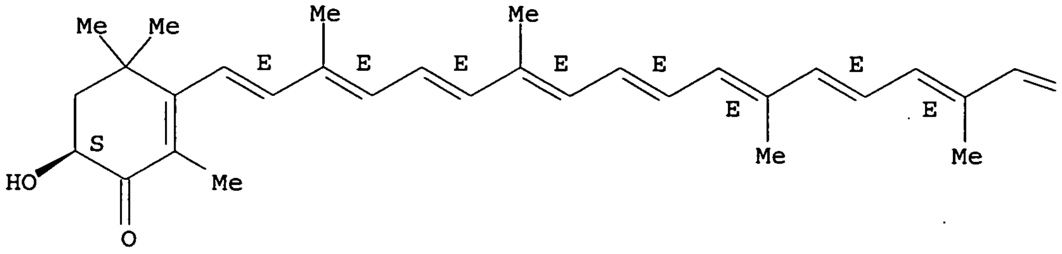


RN 472-61-7 CAPLUS

CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA
INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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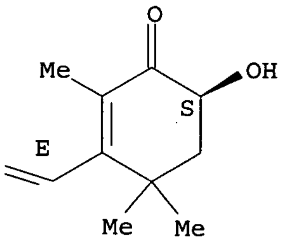
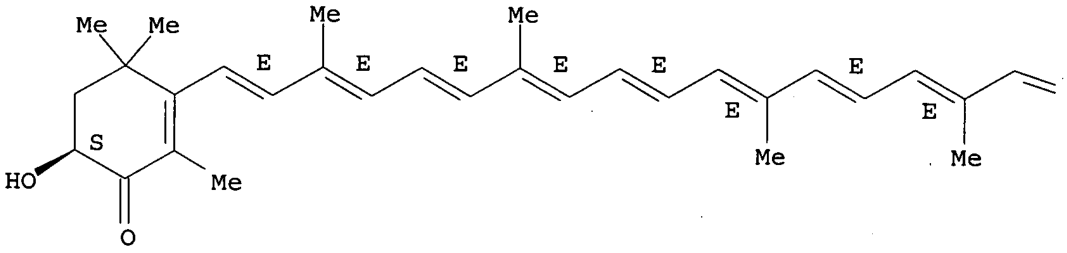


RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA
INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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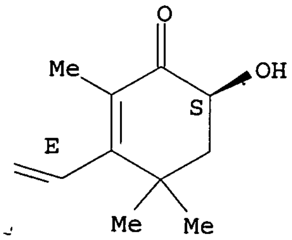


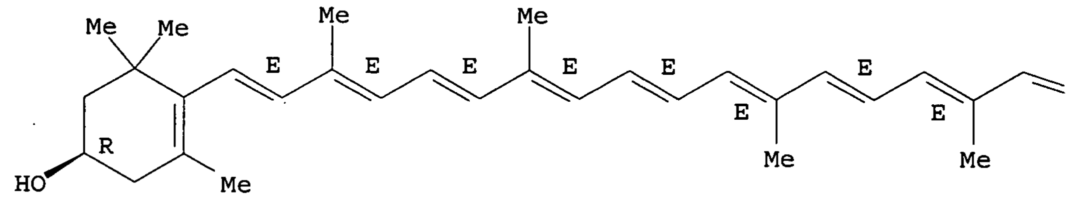
L11 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1977:530791 CAPLUS
DOCUMENT NUMBER: 87:130791
TITLE: Investigations of carotenoids in some animals of the Adriatic Sea. V. Echinodermata
AUTHOR(S): Czeczuga, Bazyli
CORPORATE SOURCE: Dep. Gen. Biol., Med. Acad., Bialystok, Pol.
SOURCE: Hydrobiologia (**1977**), 54(2), 177-80
CODEN: HYDRB8; ISSN: 0018-8158
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Carotenoids in Echinodermata from the Adriatic Sea were identified by column and thin-layer chromatog. Coscinasterias tenuispina contained β-carotene, isocryptoxanthin, lutein, lutein 5,6-epoxide, 4-hydroxy-4-keto-β-carotene, zeaxanthin, astaxanthin, and asterinic acid. Marthasterias glacialis contained β-carotene, echinenone, cryptoxanthin, lutein, lutein 5,6-epoxide, 4-hydroxy-4-keto-β-carotene, zeaxanthin, astaxanthin **ester**, **astaxanthin**, and 3,4-didehydro-α-carotene. Paracentrotus lividus contained β-carotene, echinenone, cryptoxanthin, isocryptoxanthin, lutein, lutein 5,6-epoxide, 4-hydroxy-4-keto-β-carotene, zeaxanthin, astaxanthin, astaxanthin ester, and asterinic acid. Sphaerechinus granularis contained β-carotene, echinenone, cryptoxanthin, lutein, lutein 5,6-epoxide, astaxanthin, and guaraxanthin.

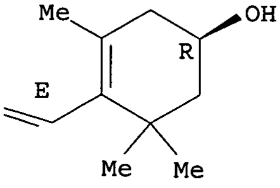
IT **144-68-3 472-61-7 472-61-7D**, esters
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(of echinoderms)
RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



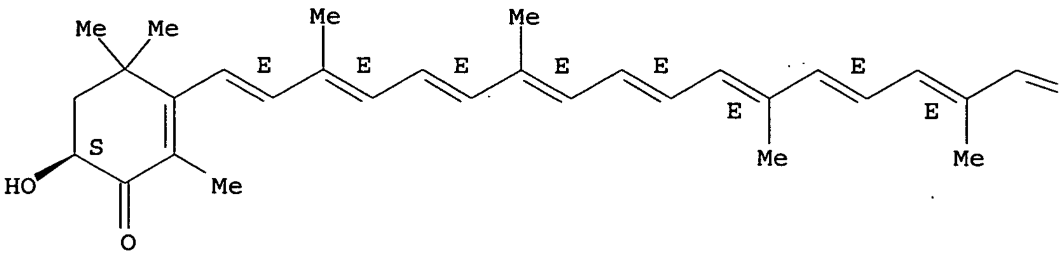
PAGE 1-B



RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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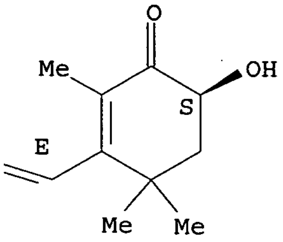
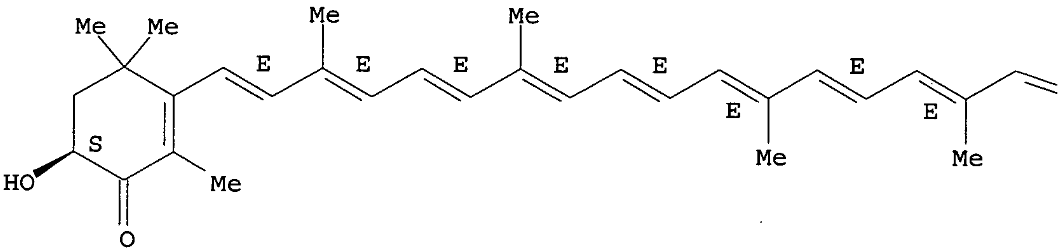


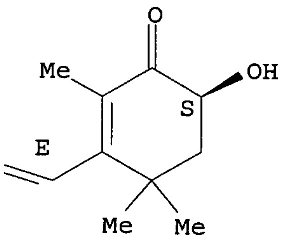
RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L11 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1977:86414 CAPLUS
DOCUMENT NUMBER: 86:86414
TITLE: Investigations of carotenoids in some faunal elements of the Adriatic Sea. IV. Molluscs

AUTHOR(S): Czeczuga, B.
CORPORATE SOURCE: Biostruct. Inst., Bialystok Med. Acad., Bialystok, Pol.
SOURCE: Hydrobiologia **(1976)**, 51(1), 71-5
CODEN: HYDRB8; ISSN: 0018-8158
DOCUMENT TYPE: Journal
LANGUAGE: English

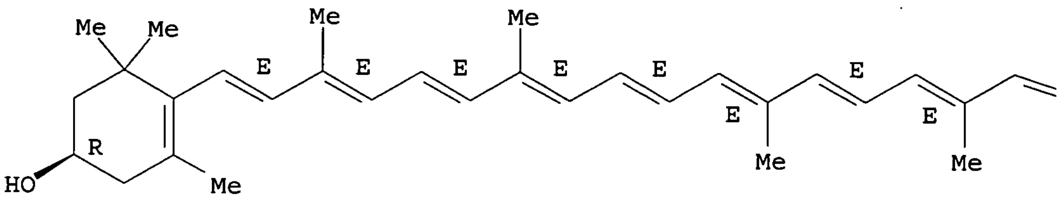
AB The carotenoids in the mollusks Clanculus cruciatus, Patella coerulea, Mytilus galloprovincialis, Sepia officinalis, and Loligo vulgaris from the Adriatic sea were investigated. The following carotenoids were found: in C. cruciatus: mytiloxanthin-like, lutein, lutein **ester**, **zeaxanthin**, and astaxanthin-like; in P. coerulea: mytiloxanthin-like, lutein, lutein ester, lutein 5,6-epoxide, zeaxanthin, and astaxanthin-like; in M. galloprovincialis: β-carotene, mytiloxanthin-like, lutein, lutein ester, lutein 5,6-epoxide, and zeaxanthin; in S. officinalis: β-carotene, lutein, lutein ester, tunaxanthin, and zeaxanthin; in L. vulgaris: α-carotene, β-carotene, γ-carotene, α-cryptoxanthin, isocryptoxanthin, isorenieratene, capsanthin, capsorubin, mutatochrome, triophaxanthin, zeaxanthin, 4-hydroxy-α-carotene, and 4-keto-γ-carotene.

IT **144-68-3 472-61-7**
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(of mollusks)

RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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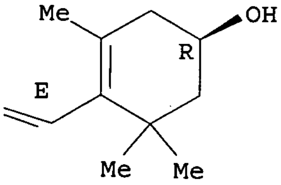
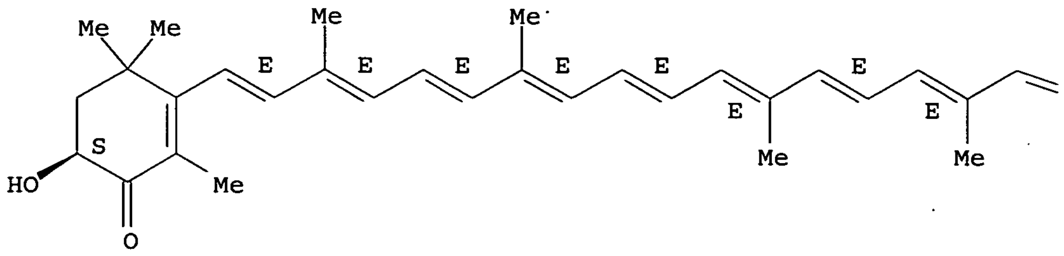


RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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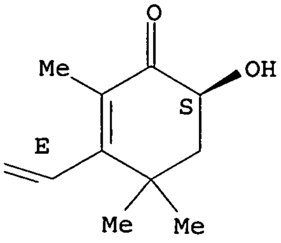


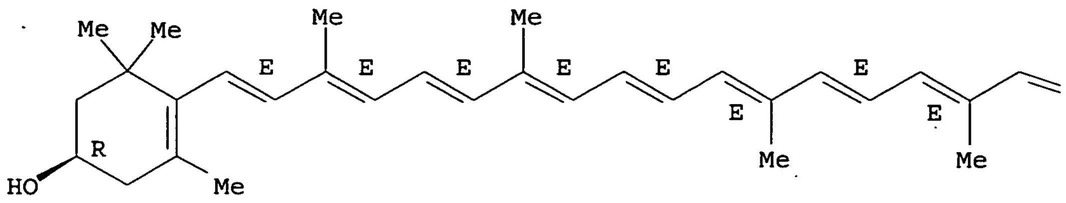
L11 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1968:19954 CAPLUS
DOCUMENT NUMBER: 68:19954
TITLE: Disposition of carotenoids in the blue goose barnacle, Lepas fascicularis
AUTHOR(S): Fox, Denis L.; Smith, Vann Elliott; Wolfson, Arthur A.
CORPORATE SOURCE: Scripps Inst. of Oceanog Univ. of California, La Jolla, CA, USA
SOURCE: Experientia (**1967**), 23(11), 965-6
CODEN: EXPEAM; ISSN: 0014-4754
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Specimens of the barnacle L. fascicularis were dissected and the gut and somatic tissues and ova extracted in EtOH. Spectrophotometry and thin-layer chromatog. on silica gel revealed carotene and astaxanthin. High proportions of β-carotene, free and **esterified zeaxanthin**, and other unidentified neutral xanthophylls inferred evidence for the representation of algae and algal detritus in the natural diet. Astaxanthin comprised 97.8% of the carotenoids in the ova, 82.2% in the soma, and 56% in gut and contents. It is suggested that the carotenoid of the eggs may stabilize the protein against thermally or photochem. induced modification in warmer seas. The rich stores of astaxanthin serve possibly for the elaboration of the photoreceptive equipment. 14 references.

IT **144-68-3 472-61-7**
RL: BIOL (Biological study)
(in barnacles)
RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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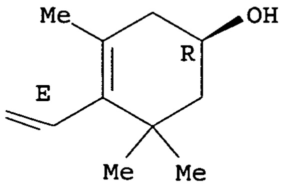
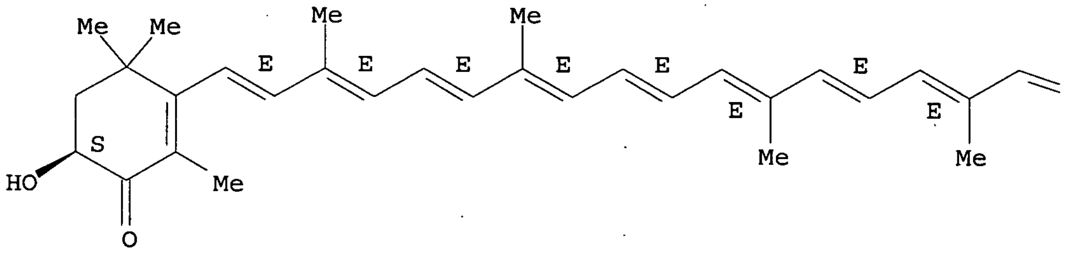


RN   472-61-7   CAPLUS
CN   β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA
      INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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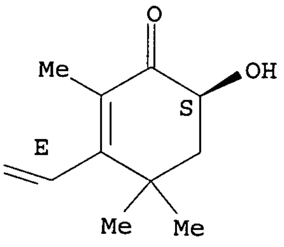


L11 ANSWER 10 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	1967:451477 CAPLUS
DOCUMENT NUMBER:	67:51477
TITLE:	Carotenoid fractionation in the plumose anemone Metridium
AUTHOR(S):	Fox, Denis L.; Crozier, George F.; Smith, Vann Elliott
CORPORATE SOURCE:	Univ. of California, La Jolla, CA, USA
SOURCE:	Comparative Biochemistry and Physiology (**1967**), 22(1), 17-88 CODEN: CBCPAI; ISSN: 0010-406X
DOCUMENT TYPE:	Journal

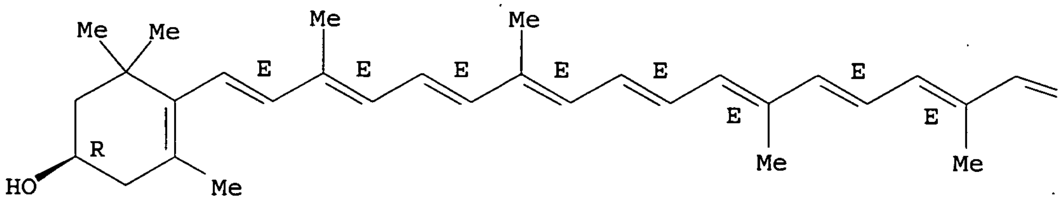
LANGUAGE: English

AB Several color variants of the Pacific Coast plumose anemone, M. senile fimbriatum, and the red form of the British species, M. senile senile, yielded astaxanthin esters as the preponderant carotenoid fraction stored in somatic or in gonadal tissues. White males assimilated no carotenoid from a protracted diet of finely divided salmon flesh, rich in astaxanthin. Nor did the whole body of a large, mature white male yield more than traces of astaxanthin or of any other carotenoid. Pacific Coast Metridium with white, red, or various shades of brown somatic tissues stored in their gonads various concns. of carotenoids, predominately **esterified astaxanthin**. Somatic tissues of colored types, including red variants from Britain, likewise yield astaxanthin esters, mostly epiphasic, but with some ambiphasic, in systems of hexane +95% MeOH. Esters of zeaxanthin (or certainly of a neutral xanthophyll exhibiting zeaxanthin's spectral and partitional properties) were usually present, while minor amts. of unfamilar ketones or hydroxyketones were of occasional incidence. Red specimens from Britain likewise yielded zeaxanthin and its esters, as well as occasional minor quantities of acidogenic carotenoid esters (or the free compound) different from astaxanthin. No carotenes were detected in either species. M. senile fimbriatum exhibits some similarities to, and certain apparent differences from, its British relative, M. senile senile, with respect to the metabolic fractionation of dietary carotenoids. 11 references.

IT **144-68-3 472-61-7**
RL: BIOL (Biological study)
(in sea anemones, taxonomy and)
RN 144-68-3 CAPLUS
CN β,β-Carotene-3,3'-diol, (3R,3'R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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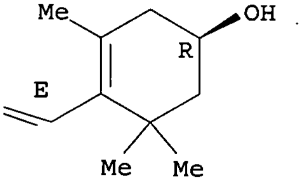
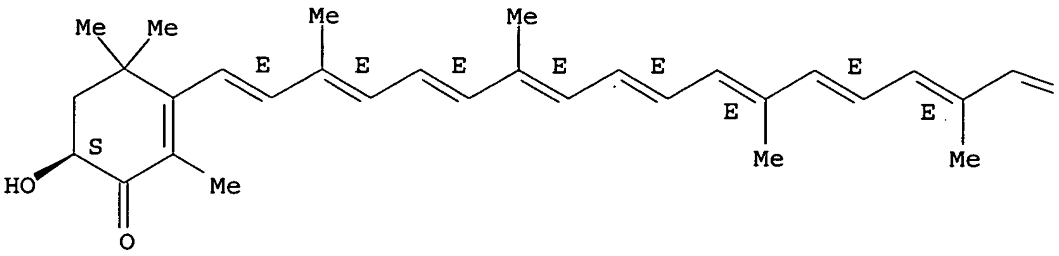


RN 472-61-7 CAPLUS
CN β,β-Carotene-4,4'-dione, 3,3'-dihydroxy-, (3S,3'S)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.

PAGE 1-A



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